

Amendment and Response

Applicant: Mark W. Minne et al.

Serial No.: 09/718,322

Filed: November 22, 2000

Docket No.: 10007268-1

Title: ONE-TIME-USE DIGITAL CAMERA

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of the claims:

1. (Original) A one-time-use camera comprising:
an electronic digital camera system for generating digital image data representative of a captured image;
a non-volatile memory in communication with the electronic digital camera system for storing the digital image data, the non-volatile memory comprising a matrix memory component, the matrix memory component including a first layer of parallel conductors, a second layer of parallel conductors oriented mutually orthogonal to the first set of parallel conductors, and a functional medium disposed between the first layer and the second layer, wherein an addressable cell in the functional medium is defined at an intersection of each first layer parallel conductor and second layer parallel conductor; and
wherein supplying an electrical energy directly to the functional medium of the cell detects or changes the logical state of the cell, for reading and writing the digital image data at the matrix memory component.
2. (Original) The camera of claim 1, wherein the functional medium is made of an organic material with non-linear impedance characteristics.
3. (Original) The camera of claim 1, wherein the functional medium includes a polymer material.
4. (Original) The camera of claim 1, wherein the functional medium includes an amorphous silicon material.
5. (Original) The camera of claim 1, wherein the functional medium includes a low molecular weight organic material.

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6. (Original) The camera of claim 1, further comprising an external interface wherein the external interface is configured for transfer of the digital image data to an external device.

7. (Currently Amended) ~~The camera of claim 1~~ A one-time-use camera comprising:
an electronic digital camera system for generating digital image data representative of
a captured image;

a non-volatile memory in communication with the electronic digital camera system
for storing the digital image data, the non-volatile memory comprising a matrix memory
component, the matrix memory component including a first layer of parallel conductors, a
second layer of parallel conductors oriented mutually orthogonal to the first set of parallel
conductors, and a functional medium disposed between the first layer and the second layer,
wherein an addressable cell in the functional medium is defined at an intersection of each
first layer parallel conductor and second layer parallel conductor; and

wherein supplying an electrical energy directly to the functional medium of the cell
detects or changes the logical state of the cell, for reading and writing the digital image data
at the matrix memory component, further comprising a camera housing, wherein the wherein
the non-volatile memory component is attached to the housing.

8. (Original) The camera of claim 7, wherein the housing includes a front portion and a back portion, wherein the non-volatile memory component is attached to the back portion defining a camera back memory assembly.

9. (Original) The camera of claim 8, wherein the camera back memory assembly is removable from the front portion.

10. (Original) The camera of claim 9, wherein the camera back assembly is replaceable with a second camera back assembly.

11. (Original) The camera of claim 1, wherein the non-volatile memory component is removable from the camera.

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12. (Original) The camera of claim 11, wherein the non-volatile memory component is replaceable with a second non-volatile memory component for reuse of the camera.
13. (Original) The camera of claim 1, wherein the memory component includes an external device interface for transferring the digital image data to an external device.
14. (Original) The camera of claim 1, wherein the electronic digital camera system includes a lens system, a shutter system, a charge coupled device, an analog to digital converter, a digital signal processor, and a camera system processor for receiving an image and converting the image to digital image data stored in the memory component.
15. (Original) The camera of claim 1, wherein the electronic digital camera system includes an external device interface for transferring the digital image data stored at the memory component to an external device.
16. (Original) A one-time-use camera comprising:
an electronic digital camera system for generating digital image data representative of a captured image, the electronic digital camera system including a mode switch for allowing a user to select a mode of operation of the camera;
a non-volatile memory in communication with the electronic digital camera system for storing the digital image data, the non-volatile memory comprising a matrix memory component, the matrix memory component including a first layer of parallel conductors, a second layer of parallel conductors oriented mutually orthogonal to the first set of parallel conductors, and a functional medium disposed between the first layer and the second layer, wherein an addressable cell in the functional medium is defined at an intersection of each first layer parallel conductor and second layer parallel conductor; and
wherein supplying an electrical energy directly to the functional medium of the cell detects or changes the logical state of the cell, for reading and writing the digital image data at the matrix memory component.

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17. (Original) The camera of claim 16, wherein the electronic digital camera system includes a microphone system for recording sound as part of the digital image data.
18. (Original) The camera of claim 16, including a selectable mode of operation for recording a still picture as the digital image data.
19. (Original) The camera of claim 16, including a selectable mode of operation for recording still picture and sound associated with the still picture as the digital image data.
20. (Original) The camera of claim 16, including a selectable mode of operation for recording video as the digital image data.
21. (Original) The camera of claim 16, including a selectable mode of operation for recording video and sound associated with the video as the digital image data.
22. (Cancelled)
23. (Currently Amended) ~~The method of claim 22, comprising~~ A method of using a one-time-use camera comprising:
defining a digital camera including a camera housing, an electronic digital camera system for generating digital image data representative of a captured image; and a non-volatile memory including a write once memory matrix component in communication with the electronic digital camera system for storing the digital image data;
capturing an image using the digital camera and storing the image as digital image data in the non-volatile memory;
removing the non-volatile memory; and
transferring the digital image data from the non-volatile memory to a portable medium;
defining the write once memory matrix component including a first layer of parallel conductors, a second layer of parallel conductors oriented mutually orthogonal to the first set of parallel conductors, and a functional medium disposed between the first layer and the

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second layer, wherein an addressable cell in the functional medium is defined at an intersection of each first layer parallel conductor and second layer parallel conductor.

24. (Currently Amended) The method of claim 2223, defining the portable medium as photographic prints.

25. (Currently Amended) The method of claim 2223, defining the portable medium as a digital video disk.

26. (Currently Amended) The method of claim 2223, further comprising replacing the non-volatile memory with a second non-volatile memory such that the one-time-use camera is available for reuse.

27. (Original) The method of claim 26, wherein the step of replacing the non-volatile memory with a second non-volatile memory includes replacing the second portion of the housing with a third housing portion having the second non-volatile memory attached thereto.

28. (Currently Amended) The method of claim 2223, further comprising the step of sending the portable medium to a user.

29. (Currently Amended) The method of claim 2223, including defining the functional medium to include an organic material having non-linear impedance characteristics.

30. (Currently Amended) The method of claim 2223, including defining the functional medium to include an amorphous silicon material.

31. (Currently Amended) The method of claim 2223, including defining the functional medium to include a polymer.

32. (Currently Amended) The method of claim 2223, including defining the functional material to include a low molecular weight organic material.

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33. (New) A disposable digital camera comprising:

an electronic digital camera system for generating digital image data representative of a captured image, the electronic digital camera system includes a lens system, a shutter system, a charge coupled device, an analog to digital converter, a digital signal processor, and a camera system processor for receiving an image and converting the image to digital image data;

a non-volatile memory in communication with the electronic digital camera system for storing the digital image data, the non-volatile memory comprising a matrix memory component, the matrix memory component including a first layer of parallel conductors, a second layer of parallel conductors oriented mutually orthogonal to the first set of parallel conductors, and a flexible, substantially planar functional medium disposed between the first layer and the second layer, wherein the functional medium is made of an organic material with non-linear impedance characteristics, the functional medium including a polymer material, and wherein an addressable cell in the functional medium is defined at an intersection of each first layer parallel conductor and second layer parallel conductor; and

wherein supplying an electrical energy directly to the functional medium of the cell detects or changes the logical state of the cell, for reading and writing the digital image data at the matrix memory component.

34. (New) The camera of claim 33, further comprising a camera housing, the housing including a front portion and a back portion, wherein the non-volatile memory component is attached to the back portion defining a camera back memory assembly, wherein the camera back memory assembly is removable from the front portion.

35. (New) The camera of claim 34, the back portion having a major surface, the matrix memory component having a substantially planar, layer-like structure attached to the major surface of the back portion.

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36. (New) A digital camera comprising:
an electronic digital camera system for generating digital image data representative of a captured image; and
a housing having a camera back memory assembly removable from the housing to provide a one-time-use digital camera.
37. (New) The camera of claim 36, wherein the camera back memory assembly includes a removable portion and a memory component secured to the removable portion.
38. (New) The camera of claim 37, the housing comprising a front portion, wherein the front portion and the removable portion are made of a polymeric material.
39. (New) The camera of claim 37, the camera back memory assembly comprising:
a mechanism configured to secure the camera back memory assembly to the digital camera, while allowing removal of the camera back memory assembly from the digital camera.
40. (New) The camera of claim 39, wherein the mechanism includes one or more tab mechanisms extending from the removable housing to aid in securing the camera back memory assembly to the digital camera.
41. (New) The camera of claim 38, the electronic digital camera system comprising:
a lens system; and
a processor in communication with the camera back memory assembly.
42. (New) The camera of claim 41, wherein the processor is housed in a front portion of the housing.
43. (New) The camera of claim 36, wherein the camera back memory assembly includes a write-once memory.

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44. (New) A one-time-use digital camera comprising:
an electronic digital camera system for generating image data representative of a captured image; and
a non-volatile memory component for storing the image data, wherein the memory component is a write-once memory.
45. (New) The camera of claim 44, wherein the electronic digital camera system comprises a random access memory for temporary storage of image data prior to selectively storing the image data in the memory component.
46. (New) A method, comprising:
attaching a first housing portion having a memory formed therein to a second housing portion to form a one-time-use digital camera;
capturing digital images with the one-time-use digital camera;
removing the first housing portion from the second housing portion; and
retrieving the digital images from the first housing portion.
47. (New) The method of claim 46, comprising:
storing the digital images in the memory; and
retrieving the digital images from the memory in the first housing portion.
48. (New) The method of claim 46, comprising:
disposing of the first housing portion.
49. (New) The method of claim 46, comprising:
reusing the second housing portion;
replacing the first housing portion with a third housing portion having a memory; and
attaching the third housing portion to the second housing portion to form another one-time-use digital camera.
50. (New) The method of claim 46, comprising:

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forming the first housing portion and the second housing portion of a polymeric material.

51. (New) The method of claim 46, comprising:
providing the memory as a nonvolatile memory.
52. (New) The method of claim 46, comprising:
providing the memory as a write-once memory.
53. (New) The method of claim 46, comprising:
capturing digital images with the one-time-use digital camera until the memory in the first housing portion is full; and
replacing the first housing portion with a third housing portion having a memory with available storage.
54. (New) The method of claim 46, wherein capturing digital images includes capturing still images.
55. (New) The method of claim 46, wherein capturing digital images includes capturing motion images.
56. (New) The method of claim 46, wherein capturing digital images includes capturing sound associated with the digital images.
57. (New) The method of claim 46, further comprising providing the first housing portion as a camera back assembly.
58. (New) A method comprising:
providing a one-time-use digital camera to a user;
capturing digital images with the one-time-use digital camera;
storing the digital images in the one-time-use digital camera;

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- providing the one-time-use digital camera to a third party;
retrieving the digital images from the one-time-use digital camera, by the third party;
restoring the one-time-use digital camera for reuse, by the third party; and
returning the one-time-use camera back to the user for reuse by the user.
59. (New) A method comprising:
capturing digital images with a one-time-use digital camera having a memory;
storing the digital images in the memory;
providing the one-time-use digital camera to a third party;
retrieving the digital images from the memory, by the third party;
restoring the one-time-use digital camera for reuse, by the third party; and
making the one-time-use digital camera available for reuse.
60. (New) The method of claim 59, wherein restoring the one-time-use digital camera for reuse includes restoring the memory such that the memory is suitable for storing captured digital images.
61. (New) The method of claim 59, wherein restoring the one-time-use camera for reuse includes providing a restored memory suitable for storing digital images to the one-time-use digital camera.
62. (New) The method of claim 59, wherein making the one-time-use digital camera available for reuse includes reselling the one-time-use digital camera.
63. (New) The method of claim 59, wherein retrieving the digital images from the memory includes transferring the digital images from the memory via an external interface.
64. (New) The method of claim 59, wherein retrieving the digital images from the memory includes transferring the digital images to a media.

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65. (New) The method of claim 64, wherein transferring the digital images to a media includes transferring the digital images to a compact disk.
66. (New) The method of claim 64, wherein transferring the digital images to a media includes transferring the digital images to photographic paper.
67. (New) A method comprising:
- capturing digital images with a one-time-use digital camera having a limiting-use component;
 - storing the digital images in the one-time-use digital camera;
 - providing the one-time-use use digital camera to a third party;
 - retrieving the digital images from the one-time-use digital camera, by the third party;
 - restoring the one-time-use digital camera for reuse via the limiting-use component, by the third party; and
 - making the one-time-use digital camera available for reuse.
68. (New) A method comprising:
- receiving from a user a one-time-use digital camera having a limiting-use component, the one-time-use digital camera having digital images stored therein;
 - retrieving the digital images stored in the one-time-use digital camera;
 - rcstoring the one-time-use camera for reuse; and
 - returning the restored one-time-use digital camera to the user.
69. (New) The method of claim 68, further comprising making the one-time-use digital camera available for reuse by another.
70. (New) The method of claim 68, wherein restoring the one-time-use digital camera includes restoring the one-time-use digital camera for reuse via the limiting-use component, including providing the one-time-use digital camera with a memory suitable for storing digital images.

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71. (New) An apparatus comprising:
a digital camera having a limiting-use component to limit use of the digital camera to a single use-cycle.
72. (New) The apparatus of claim 71, further comprising:
a reset mechanism to refurbish the use of the digital camera for another use-cycle.
73. (New) The apparatus of claim 71, further comprising:
a communication port on the digital camera for retrieving digital images from the limiting-use component.
74. (New) The apparatus of claim 71, wherein the limiting-use component comprises a memory having a preset capacity to store data corresponding to a preset amount of pictures.
75. (New) The apparatus of claim 71, wherein refurbishing comprises resetting a component contained in the digital camera to facilitate another use-cycle of the digital camera.
76. (New) The apparatus of claim 75, wherein refurbishing comprises replacing a component contained in the digital camera to facilitate another use-cycle of the digital camera.
77. (New) The apparatus of claim 71, further comprising:
a memory within the digital camera to store image data; and
a communication port to transfer the image data to an external processing unit that performs image-processing operations on the image data.
78. (New) A method, comprising:
limiting digital image capture capabilities of a digital camera for a single-use cycle;
and
refurbishing the digital camera for another use-cycle.

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79. (New) The method of claim 78, further comprising:
covering portions of the digital camera with an external casing, the covered portions
being inaccessible to a consumer.
80. (New) The method of claim 78, wherein refurbishing comprises making the digital
camera functional for another use-cycle.
81. (New) The method of claim 78, wherein refurbishing comprises resetting a
component contained in the digital camera to facilitate another use-cycle of the digital
camera.
82. (New) The method of claim 78, further comprising:
communicating image data stored in the digital camera to a processing unit external to
the digital camera through a proprietary connection.
83. (New) The method of claim 78, further comprising:
selling the same digital camera two or more times.